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To the Graduate Program:

This project, entitled “Connecting Brain Research and Metacognition for Developing English Language Skills in Young Learners” and written by Carmen Sacasa, is presented to the Graduate Program of Greensboro College. I recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts with a Major in Teaching English to Speakers of Other Languages.

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Project and recommend its
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CONNECTING BRAIN RESEARCH AND METACOGNITION
FOR DEVELOPING ENGLISH LANGUAGE SKILLS
IN YOUNG LEARNERS

Presented to
the Graduate Program
of
Greensboro College

In partial Fulfillment
Of the Requirements for the Degree
Master of Arts in
Teaching English to Speakers of Other Languages

by
Carmen Sacasa

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Advisor: Professor Paula Wilder

Abstract

During the past year, the government of Costa Rica established the teaching and learning of English as a national priority, therefore there are a growing number of private and public schools offering English language programs beginning from preschool level. In the early childhood classroom, EFL teachers are, facing many challenges corresponding to the characteristics of the age and development of young children. Thereby, effective EFL programs and approaches should consider the needs, strengths, and learning abilities of young ELLs. This thesis project comprises a workshop for EFL teachers of young learners, where teachers will explore recent information about what brain research has revealed about how young children learn, the practice of metacognitive strategies, and the implications for young ELLs in their process of learning English.

Dedication

This thesis is dedicated to the honor and glory of God and to my beautiful and loving family who supported me every step of the way to complete this thesis.

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Chapter 1: Introduction

In the Costarican society, the learning of English as a second language has always been highly valued and considered one of the main components in any outstanding educational program. Furthermore, many believe that the teaching and learning of English has contributed to the growth of the country's socio-economic and cultural development (Arroyo, 2012). Largely due to these assumptions and to the known benefits of learning languages, in the past decade, there have been a growing number of private schools that have offered multilingual and bilingual (English/Spanish) educational programs for children beginning from a very young age. Likewise, last year the government of Costa Rica announced that the teaching and learning of English was a national priority. Therefore, public schools will also offer English language programs at the preschool level (Azofeifa, 2018).

Due to the growing interest in learning English, many EFL teachers are having to work with young children in settings where English is the main language of instruction although the vast majority of the student population consists of native Spanish speakers. The EFL teacher is encountering a number of challenges and opportunities, and many of which correspond to the characteristics of the age and development of children. Thereby, effective EFL programs and approaches must be based on the needs, strengths, and learning abilities of this population.

Similarly, EFL teachers of preschool children need to give priority to learning and understanding how young children learn best. The latest research findings about the brain and learning are now more accessible for educators in order for them to plan and implement more efficient teaching approaches and techniques in the classroom. EFL teachers must guide ELLs to become independent and active learners by instructing them about cognitive and metacognitive

strategies (Wilson & Conyers, 2013). As a result, ELLs will be better prepared to acquire new skills for developing their English language as well as for their integral learning experience.

However, many educational researchers have noted that although in the past 25 years there has been more discoveries and information about brain development and learning, the application of these new findings in education are not happening accordingly (Willingham, 2009, p.1). EFL teachers, mainstream teachers, or anyone involved in education should have knowledge of how the brain develops during the first years of life and what this means for a child's learning and development. Wolfe (2000) explained that "Information about the brain and how it learns is not merely interesting, it's an essential element in the foundation of which we should base our educational decisions. The brain matters because our children matter"(p. 191). Knowing more about how the mind works should transform education, the approaches, and strategies that are used, and the learning experiences prepared for the students.

When EFL teachers gain more understanding of how young children learn and train students to use metacognitive and cognitive skills, as Wilson and Conyers (2012) asserted, students will have the tools that "will help develop their abilities to become self-directed learners who are better able to improve their academic performance across the curriculum and effectively transfer and apply what they have learned" (p. 8). Conversely, in different studies neurologists have found that learning can be compromised when the child has a passive role, and so what will this mean in the EFL classroom when working with preschoolers? How can young children engage in the process of acquiring their L2? According to Hinton, Fischer, and Glennon (2012), although the brain is always learning, "active engagement is necessary for learning" (p. 5).

Therefore, the purpose of this project is to design a workshop for EFL teachers of early childhood education. Through the workshop, teachers will become familiar with some facts

about how the brain learns, brain plasticity, and the implications for education. Also, they will recognize metacognition and the cognitive skills as effective tools to improve young ELLs' acquisition of English as a second language.

EFL preschool teachers will find this workshop to be a useful resource for their own professional development. At the same time, EFL preschool students will benefit the most since they will gain ownership of their learning, enjoy and participate more fully in the language activities, and develop "the key skills they need to fulfill their potential" (BSCR, 2019).

Chapter Two: Literature Review

In this chapter I review the literature on the latest cognitive neuroscience research regarding how the brain learns, how learning affects the brain, and the implications for young ELLs. First, I begin by discussing the importance of brain research for education. I then provide information on the latest findings about the brain that are relevant to understanding the brain's development process in the young learner, followed by a revision of implications of those findings for ELLs. Then, I continue with an overview of metacognition and a summary of some definitions regarding metacognition. I conclude by examining some metacognitive strategies that teachers of young ELLs can develop with their students.

The Developing Brain

The main findings from brain development research have been used in the early years classrooms and environments to understand the developmental processes of children in order to provide the most appropriate practice (Gallagher, 2005). The data gained from cognitive neuroscience research can lead educators to better understand the way the brain works and how it is connected to learning (Goswami, 2008). Goswami (2008) stated that "the brain is the main organ of learning, and so a deeper understanding of the brain would appear highly relevant to education" (p. 381). Thus providing educators with the knowledge to prepare most favorable learning environments as well as the application of effective teaching practices that will benefit all students in their learning. Primarily we must first analyze what recent neuroscience research is revealing about how the brain processes information specifically in relation to the way young children learn.

In order to better understand how learning happens in our complex brain, it is necessary to begin by examining some of the basic elements and functions of the brain's structure (Zadina,

2014). Wolfe (2010) explained that the brain can be divided into two major divisions: the subcortical system and the cortex. The subcortical system works at an unconscious level in charge of processing the primary functions for survival as regulating our heart rate, breathing, blood pressure, motor control, as well as keeping us safe from danger. The cortex consists of the systems that operate at a conscious level performing more complex functions (Wolfe, 2010). At the front of the brain, in the cerebral cortex is where “analyzing, creating, planning, learning, remembering, making decisions and even visualizing all take place” (Paling, 2017, p.19).

Inside the brain and throughout the spinal cord there are about 100 billion nerve cells called neurons (Paling, 2017). Apart from neurons, the brain contains other cells, such as glial cells, which support neurons’ transmission of information to the different parts of the brain (Robson, 2012). In the past, scientists were convinced that humans were born with a set number of neurons, but recent studies have proved that the brain is able to generate new neurons (Wolfe, 2010). Each neuron forms from 1000 to 10,000 connections with other neurons in the brain. Neurons send electrochemical impulses creating neural networks through a process called synaptogenesis. Through these electrochemical impulses or synapses is that neurons communicate and exchange new methodologies (Goswami, 2008). Likewise, Wolfe (2010) proposed that by knowing how the brain learns, educators can plan and use more effective teaching practices that will benefit all students in their learning. Primarily we must first analyze what recent neuroscience research is revealing about how the brain processes information specifically in relation to the way young children learn.

Inside the brain and throughout the spinal cord there are about 100 billion nerve cells called neurons (Paling, 2017). Apart from neurons, the brain contains other cells, such as glial cells, which support neurons’ transmission of information to the different parts of the brain

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In our brains neurons make fiber connections or synapses that involve processes that are either “experience-expectant” or “experience-dependent” (Goswami, 2008, p. 382). On one hand, “experience-expectant plasticity refers to experiences that are common to all humans and are important for typical development, such as learning to walk and talk” (Wilson & Conyers 2013, p. 2). According to Wilson and Conyers (2013), these experiences develop during “sensitive periods” (p. 2), when the brain and body are suited for the development of an ability. Wolfe (2010) referred to sensitive periods as “optimal times for development of basic sensory abilities” (p. 77). Then if the necessary stimuli is not present, the natural development is affected (Wolfe, 2010).

Jensen (2005) affirmed that it is during the first years of life that “emotions, sensory motor development, auditory development and vision” (p. 22) happen as part of the developmental process of the brain to build the foundations for later learning. In this beginning stage is that “sensitive periods” have been identified, when fast paced connections between neurons evolve in the children’s brains, thus, making the brain more sensitive and malleable for learning and developing skills (Meltzoff, Kuhl, Movellan, & Sejnowski, 2009).

On the other hand, experience-dependent neural connections happen “to encode unique information that is experienced by the individual” (Goswami 2008, p. 382). Experience-dependent connections are part of the connections that are formed through our interactions with others, the environment and education, allowing brain plasticity for life-long learning (Goswami, 2008).

Studies about child development acknowledged that children’s learning happens very early in infancy involving complex processes in the brain (Kuhl, 2011). The formation of the brain begins as early as three weeks into gestation when brain cells are being produced in the fetus, forming networks of connections between the cells (Wolfe, 2010). The number of neural connections continues to increase at an accelerated rate in the infant’s brain, in such a way that, a two year old may have 40 percent more neurons and synapses than an adult. These synapses develop in response to the infants’ experiences in their environment (Robson, 2012). At the same time, other researchers have suggested that the reason for the exaggerated number of synapses in this phase is to prepare children for whatever they might need for their development (Gallagher, 2005). After the first years of life, the neural structures progressively specialize as a result of the growth of fiber connections (Goswami, 2008). Therefore, the frequently used connections between neurons become stronger building neural pathways in the brain while the ones that have not been used begin to slow down and are eliminated through the process of pruning (Wolfe, 2010).

In addition to the actions that occur in our brain when we learn new information or concepts, Zadina (2014) identified two different mechanisms that happen in the brain during the process of thinking and learning. Zadina (2014) explained that in the brain thinking happens through the firing of chemicals and neurons connecting and communicating. Based on the

function that neurons perform of passing information is that neurons receive the name of “neurotransmitters”, whereas learning happens when neurons continuously “fire together” strengthening connections. Zadina (2014) further stated that “the more a network fires, the stronger that network becomes, thus improving the ability of that network to fire again” (p.16). The neural structures for learning are determined by “the number of relevant neurons firing, their firing rates, the coherence of the firing patterns, and how ‘clean’ they are for signaling the appropriate information will all vary depending on how the current environmental input activates the existing network” (Munakata, 2001 as cited by Goswami, 2008, p. 388).

Even though there are some generalizations about the brain structure and the learning process in children, Rushton suggested, “every brain is uniquely organized” (Rushton, 2011, p. 4). Moreover, Ostroff (2012) affirmed “even though all of our brains contain the same basic structures, our neural networks are as unique as our fingertips” (p. 5). Consequently the differences in our neural structure are the results of each person's genetic structure, the brain's reactions to its own biological processes and the compendium of past and present experiences (Ostroff, 2012).

Based on the uniqueness of our brain is that Rushton (2011) argued that teachers working with young EL students need to employ leveled resources and plan language activities for different abilities and interests; so all learners can experience success in learning. Correspondingly, instruction should be focused on the process of developing each learner's skills and knowledge, as well as celebrating progress, rather than valuing only performance (Hinton, Miyamoto & Della-Chiesa, 2008).

Emotions and Learning

A number of studies have recently revealed the correlation between emotions and learning. This correlation is evident by the results provided in MRIs that show the activation of the same regions of the brain when experiencing emotions or learning (Hinton, Kurt, & Glennon, 2012). In the same way, Davidson (2012) expressed that emotions and cognition work together affecting our ability to perform in different situations. Therefore, ESL/EFL teachers should be aware that the experience of learning a second language could make ELLs susceptible to emotions, thus negatively affecting the areas in the brain for learning (Paling, 2017). By all means, schools should provide a positive and nurturing learning environment, where students feel safe and motivated to learn, and mistakes are considered as opportunities for improvement. (Hinton, Miyamoto & Della-Chiesa, 2008).

In addition, Rushton (2011) proposed that the teaching and learning that happens in the classroom should reflect each student's unique needs and areas of strengths. Rushton (2011) also suggested that as long as there is a good balance of expectations for each student's individual performance, emotions would not have a negative impact on the child's learning. Similarly, when children cultivate a positive attitude and feel supported by teachers and parents, they are able to face challenges and persevere in accomplishing their goals (Wilson & Conyers, 2013).

Brain Plasticity

Although the brain is shaped by the genetic code, neuroscientists have found that the brain changes in response to the social interactions and experiences within the environment (Wilson & Conyers, 2013). Eliot (1999) asserted that the makeup of the brain "is not fixed, but living, dynamic tissue that is constantly updating itself to meet the sensory, motor, emotional, and intellectual demands at hand" (p. 4). Studies show that plasticity and malleability of the

brain does not only happen during a specific time in life. The neural structures in the brain develop and form throughout life (Goswami, 2008).

In addition to understand the effect of brain plasticity for education, Sylwester (2010) affirmed that, “parents and educators can’t change the genetic history of a child, but they can provide the child with the best possible adaptations of whatever nature provided” (p.18). In fact, teachers need to recognize the main role they play in planning and implementing experiences that stimulate the students’ brains and motivate their desire for learning (Zadina, 2014). Zadina (2014) also explained that learning is a complex process, and for it to happen, “we have to not only fire the network; we have to wire it” (Zadina, 2014, p. 18). The wiring takes place when prior knowledge is activated and connected with the new information, thus, causing existing neural connections to become stronger. When neurons repeatedly fire together, stronger connections are built between the neurons, increasing the possibility for neurons to fire again (Zadina, 2014). The new acquisition of knowledge and skills produces changes to the structure of the brain, allowing that new similar impulses between neurons travel faster and efficiently (Wolfe, 2010).

One of the main aspects of learning is that it is a multisensory process. The senses absorb all the information that children obtain when they are actively exploring, discovering, and developing new skills in a safe and stimulating environment (Goswami, 2008). The information gathered by the senses is converted into electrochemical impulses that travel to the thalamus and get assigned to one of the lobes or the motor cortex of the brain (Rushton, 2011). Therefore, learning through different multisensory activities, enables the learning to be secured because of a high number of neurons making connections with different neural structures (Goswami, 2008).

The senses provide the children's brains with the information to learn and interact successfully in their environment (Wilson & Conyers, 2013).

Consequently, in the classroom children develop their own learning as long as they are immersed in a safe environment with ample opportunities to grasp new concepts and practice new skills (Wilson & Conyers, 2013). Similarly, research studies have demonstrated that unless children have an active participation with adults and peers in educational activities or through interactions with the learning environment, the learning will not happen nor provoke any structural changes in the brain (Hinton et al., 2012). Therefore, for children to learn and develop their knowledge and abilities to their fullest potential, they need to be actively involved in a variety of experiences and settings that will form the children's neural connections (Wilson & Conyers, 2013). Likewise, when children access new stimulating experiences, the brain creates meaning of the world around them, builds new connections, and improves and preserves existing connections (Gallagher, 2005).

Language Learning

The capacity to communicate in a language is one of our brains' exceptional traits that differentiate us from other species (Sousa, 2011). Between the first months to the first year of life, infants are able to distinguish the sounds from all languages (Meltloff et al., 2009). However, after the first year, the neural connections in the infant's brain react only to the familiar language sounds of the infant's surroundings. The sounds of the native language infants are immersed in are strengthened at the same time that they begin to lose the capacity to perceive the non-familiar sounds (Sousa, 2011).

Paling (2017) asserted that "a child's brain has amazing plasticity, capable of surprising achievements such as becoming bilingual" (p. 22). In studies using neuroimaging technologies,

researchers have found that, in the same way that monolingual children process the sounds of the first language, bilingual children, process both languages (Ramirez & Kuhl, 2017). When children learn either their L1 or L2, the brain activates the same regions in the left hemisphere (Sousa, 2011). However, depending on the age of acquisition of the L2, other areas of the brain are activated as well, which are different than the ones used when learning the L1 (Zadina, 2014).

Furthermore, Goswami (2008) affirmed that learning a second language becomes more difficult in reason of the neural structures that are already in place for the L1 language. Therefore, when the L2 is learned at an older age, second language learning requires a more sustainable effort for restructuring the strong neural connections from the L1 (Paling, 2017). Even though, young children have a greater ability to learn languages, it is important to emphasize that L2 learning will happen only when children experience social interactions with peers and adults who speak the L2, in accordance with Vygotsky's theory of proximal development (Ramirez & Kuhl, 2017).

There are different positions about the existence of a critical period for the acquisition of a second language. For instance, many neurolinguistics argued that more than being a critical or sensitive period for second language learning, there are a number of social, educational, and motivational factors that young learners enjoy which gives them advantages over older learners (Bialistok & Hakuta, 1999). Bialistok and Hakuta(1999) considered that the effort required by young L2 learners is lessened by the benefits of “a nurturing environment, simplified input, educational opportunities, collaborative peers, and other supporting aspects of a social context that facilitates the acquisition of any language” (p. 178). According to Kuhl (2010) there is a need for more L2 learning studies to prove the effects of age and the critical period hypothesis.

At the same time, Kuhl (2010) argued that L2 can be learned at any age. However, if the L2 is learned after puberty the pronunciation and grammar usage will not be as close to that of a native speaker. Consequently, when young children are not immersed in the sounds of a second language early, then they lose the ability to achieve a native-like accent (Zadina, 2014).

Metacognition

Although young children possess many advantages for learning a second language, instructing young ELLs on the practice of metacognitive strategies will influence ELLs by helping them improve their L2 performance (Raoofi, Chan, Mukundan, & Rashid, 2014). Language learning strategies help L2 learners to increase their knowledge of L2 grammar usage, vocabulary, comprehension and storage, while by using metacognitive strategies, ELLs become “aware of the way you acquire the knowledge of language” (Chatzipanteli, Grammatikopoulos, & Gregoriadis, 2013, p. 1081). A number of educational researchers promote instructing children about how to develop metacognition and cognitive strategies beginning in the first school years. The goal is, not only to enhance the students’ learning experiences and build strong foundations for improving their performance in academics, but also for edifying their personal, social, and emotional areas (Flavell & Hartman, 2004).

According to Robson (2012), self-regulation, as well as metacognition, have a significant role in the learners’ development and performance throughout their educational experience. The main role of metacognition and self-regulation are evident in areas concerning memory processes, critical thinking, problem solving, language development, and regulating emotions and feelings (Robson, 2012). Likewise, Flavell and Hartman (2004) asserted that children with metacognitive skills benefit greatly from identifying their own methods for thinking,

understanding how to arrive at solutions, and evaluating decisions. Therefore, knowing about metacognition influences children's selection of strategies for learning and for finding solutions (Flavell & Hartman, 2004).

Before analyzing the benefits of metacognitive strategies for young ESL/EFL learners, it is necessary to understand what is metacognition and which are the appropriate strategies that L2 teachers of young children can implement in their daily practices. One of the first definitions of metacognition was presented by Flavell (1979). Flavell (1979) defined metacognition as "knowledge and cognition about cognitive phenomena" (p. 906). Flavell (1979) considered metacognition to be the ability to recognize and monitor our own thinking processes for understanding and learning. Robson (2012) explained that Flavell identified three components of metacognition:

(a) seeing the self and others as learners, (b) recognizing that different tasks need different cognitive demands, and (c) selecting the right strategies for problem solving. When these components of metacognition interact efficiently, learning and performance are enhanced (Robson, 2012).

Additionally, Zimmerman and Moylan (2009) stated that "metacognition refers to knowledge, awareness, and regulation of one's thinking" (p. 299). Similarly, Wilson and Conyers (2016) described metacognition as the capacity of being aware and in control of our own thoughts and mental functions. It is therefore, that metacognition enables learners to gain control over their brains' abilities as well as to distinguish which cognitive strategies should be used and when (Wilson & Conyers, 2016).

Teaching Metacognitive Strategies

More often, educational researchers are promoting the instruction on metacognition as a main goal for teachers and students of all ages (Martinez, 2006). “Teaching students how to learn is as important as teaching them content, because acquiring both the right learning strategies and background knowledge is important-if not essential-for promoting lifelong learning”(Dunlosky, 2013 as cited by Wilson & Conyers, 2016, p. 8). Therefore learning about metacognition enables students to assume an active role in their own learning and development (Dorr & Perels, 2019).

Although young children are often not seen as agents of metacognitive abilities, there are more studies now that recognize the flourishing of metacognitive abilities in very young children. This flourishing is evident when children begin to control their behavior and manage their attention, choose their tasks according to their abilities, as well as monitor their progress (Dorr & Perels, 2019). Marulis (2014) recognized the preschool years as an essential period for young children to develop metacognition and self-regulating skills. Likewise, Kuhn (2000) stated that metacognition begins at the early ages and grows stronger as it becomes a more conscious practice for the individual. According to Kuhn (2000), the foundations are built during the first years when children begin “rapidly developing awareness of the sources of one’s knowledge” (p. 178). Consequently, metacognitive abilities improve children’s awareness about their learning (Chatzipanteli, Grammatikopoulos, & Gregoriadis, 2013).

Although there has been an increased interest for learning more about the development of metacognition on children at these early stages, there still is a need for more research focused on this age group (Marulis, 2014). A number of studies have found that young children use very basic metacognitive abilities. Therefore, teachers have the opportunity to instruct about metacognition, and by doing this, children gain greater benefits in their development and in their academic achievements (Dorr & Perels, 2019).

Additionally, in order to further develop the teaching and learning of metacognitive skills, “students must have the opportunity to practice and should be placed in situations that require metacognition” (Martinez, 2006, p. 698). Consequently, having students work together in activities where they can develop critical thinking, learn about positive emotions and resolve conflicts will benefit this process (Martinez, 2006). Likewise, Rushton (2011) considered that “children’s brains need to be immersed in real life, hands on, and meaningful learning experiences that are intertwined with a commonality and require some form of problem-solving” (p. 92). It is mainly through play and social interactions that children actively explore their natural environment, try to make sense of the world around them by observing others, exploring objects, take risks, and become active inquirers (Wilson & Conyers, 2013). During children’s first interactions with their learning environments, is that children begin to use basic metacognitive strategies, such as planning, monitoring, and being persistent to resolve tasks (Chatzipanteli, Grammatikopoulos, & Gregoriadis, 2013).

According to Wilson and Conyers (2016) there are two ways for educators to teach for and with metacognition. First by “guiding students to become self-reflective, self-directed learners who understand why, how, when, and where to use metacognitive and cognitive strategies” (p. 3). Then by having teachers engaged in developing reflective teaching practices and evaluating outcomes. Ostroff (2012) considered that classroom experiences should resemble real situations in order for students to explore and practice skills and strategies that require higher involvement (Ostroff, 2012).

Chatzipanteli et al. (2013) described several metacognitive techniques that can be used with young children to enhance their learning experience. Some of the metacognitive techniques are:

- drawing-telling technique, which encourage children to reflect and express their thoughts (Kendrick & McKay, 2002; Salmon, 2008a as cited by Chatzipanteli et al., 2013);
- self-questioning and think-aloud techniques, teachers model to students thinking about the meaning of unknown words, how they learn something, what they are wondering, use of metacognitive vocabulary, and how they can improve something (Wilson & Conyers, 2016; Fisher, 1998 as cited by Chatzipanteli et al., 2013);
- selective attention technique, the teacher models and practices activities that show students how to become better listeners, and how they can direct their attention to what is more relevant (Wilson & Conyers, 2016);
- self-regulation technique, teachers model and role-play with children appropriate behaviors and social skills, such as sharing, waiting for turns, and inviting others to play (Wilson & Conyers, 2013);
- self-monitoring technique, encourages children to reflect on their own progress and learning, become aware of where they are and what they need to do to improve (Wilson & Conyers, 2016; Chatzipanteli et al., 2013);
- reciprocal teaching technique has children work in pairs, and provide feedback to each other based on established criteria (Mosston & Ashworth, 2002 as cited by Chatzipanteli et al., 2013);
- self-check technique encourages children to evaluate themselves to continue working towards the achievement of their goal (Chatzipanteli et al., 2013).

Furthermore, Chatzipanteli et al. (2013) claimed that “educators have the obligation to implement interesting activities in an enjoyable manner that could develop young students’ high-order thinking and enable them to become self-regulated and autonomous learners for their entire

life” (p. 5). Providing young children with opportunities to explore and practice their abilities and skills to progress on their development as individuals (Wilson & Conyers, 2013).

Several studies indicate that the use of metacognition affects the learners' success in L2 learning, especially when integrated with appropriate language learning strategies (Nosratinia, et al., 2014). However, there is a need for more studies that analyze the effect of using metacognition with L2 learning strategies, for young ELLs. Finally, as Wolfe (2010) declared, “knowing how the brain learns “it’s an essential element in the foundation on which we should base our educational decisions” (p. 220). As L2 teachers we need to be informed on what research is telling us about what our young ELLs are capable of when we provide them with the right stimulus, environments and strategies to learn.

Chapter Three: Project Design

In this chapter, I present the rationale of creating an instructive and experiential workshop for early childhood educators of ELLs. The workshop consists of information about what brain research has revealed about how young children learn as well as information about metacognition and metacognitive strategies that teachers can model to and develop with their students to support their English language learning. During the different stages in the workshop, early childhood educators of ELLs will have the opportunity to share what they know about the brain and about metacognition, learn, and analyze new information, discuss ideas on how they can apply what they have learned with their students, as well as share their experiences. As a final outcome of the workshop, I intend for teachers to form a community of practice or study support group where teachers will continue to research, learn, and share from their experiences to enhance their L2 teaching practices.

In Costa Rica, there are many private schools that offer a bilingual education with English immersion programs beginning at the preschool level. Furthermore, during the past year, the government established the teaching and learning of English as a national priority, thus, resulting in public schools now offering English language development programs starting from preschool (Azofeifa, 2018). Therefore, many EFL teachers are working in early childhood education settings, facing challenges corresponding to the characteristics of the age and development of young children. Thereby, effective EFL programs and approaches must be based on the needs, strengths, and learning abilities of his population, but in order to do so, EFL teachers require more specialized formation in understanding how young children learn best. Consequently, teachers will be able to support and help children to maximize their learning

(Wilson & Conyers, 2013). One way to support this specialized formation for EFL teachers is through professional development.

According to Gurney and Liyanage (2016), effective ongoing professional development for language teachers can take many forms which are all characterized by encouraging an active participation and involvement from the teacher as a learner. Effective professional development practices are achieved when professional development is recognized as crucial for teachers to gain more knowledge about new approaches, methods, or education reforms, followed by reflection processes to enhance their teaching practice, and that will result in the improvement of their students' performance (Mann, 2005). Similarly, Murray (2010) affirmed that teachers who regularly participate in professional development are empowered by what they are teaching. Consequently, teachers feel encouraged and motivated when they obtain additional knowledge and abilities to develop their teaching practices (Murray, 2010).

Based on the premises described related to professional development practices, I have designed my project as a workshop for EFL teachers of early childhood students. The main purpose of the workshop is to generate interest in EFL teachers to examine some of the relevant findings about the brain, about metacognitive practices, and their application in the early childhood classroom. The outcome will be that EFL teachers will be better able to support their students' English language learning. According to Richards and Farell (2005), workshops are "one of the most powerful and effective forms of teacher-development activity" (p. 24). As an additional asset for using a workshop as the format for my project is that EFL teachers will enjoy some time out of the classroom to experience learning and will be able to connect with colleagues. Consequently, EFL teachers will return back to the classroom with a more positive attitude and with additional teaching tools to support their students (Murray, 2010).

Finally, the characteristics described below have served as the basis for the design of the workshop. Richards and Farell (2005) presented these characteristics as essential components in a workshop-based learning:

- involves input presented by an expert on the topic (p. 25);
- provides guidance and experience in developing skills for working with others;
- offers opportunities for participants to discuss problems and find solutions they can apply in their classroom (p. 25);
- involves collaborating and sharing of ideas with other teachers which can help to raise teachers' motivation (p. 25);
- involves planning a sequence of activities for pair and small group work (p. 28);
- supports new practices and the writing of lesson plans;
- includes reflection times for participants to reflect on what they have learned;
- involves follow up sessions to acknowledge the results of efforts and new practices (Richard & Farell, 2005, Chapter 2).

At the end of the workshop sessions participants will be motivated to form a community of practice or support group where they could meet to discuss classroom applications related to their students' English language learning.

Chapter Four: Final Project

The final project is a workshop addressed to early childhood educators of ELLs. The workshop consists of information about what brain research has revealed about how young children learn as well as information about metacognition and metacognitive strategies that teachers can model to and develop with their students to support their English language learning. The workshop is divided into two sessions, which are:

English language learning. The workshop is divided into two sessions, which are:

- Session One- The basics about young children's brain.
- Session Two- Metacognition in the Early Years to enhance ELL.

In each session participants will have the opportunity to share what they know about the brain and about metacognition, learn new information from current research, reflect on their practices, discuss ideas with colleagues and find new ways to apply what they have learned.

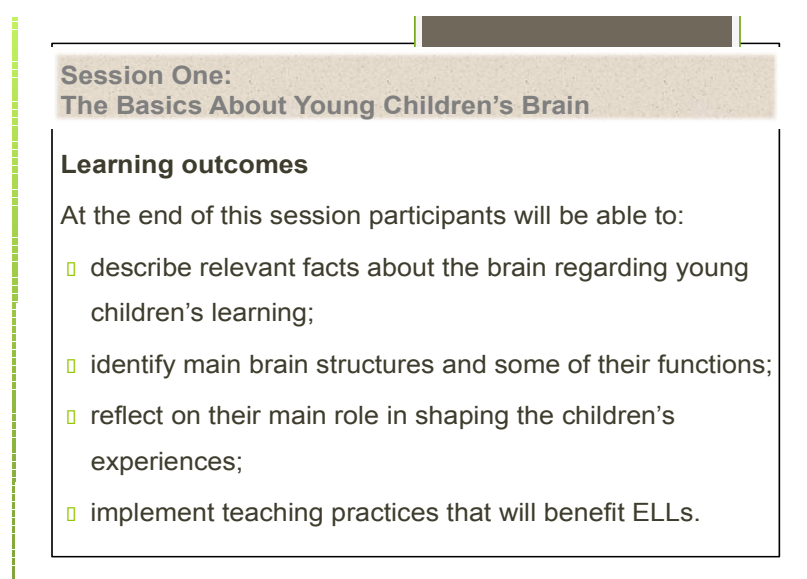
Getting the Brain and Body Ready

The workshop will begin with an invitation for teachers to stand up and slowly stretch different parts of their body, while inhaling and exhaling. Instrumental music is played in the background. The instructor will guide the activity by modelling and saying the different movements.

Body Stretches
Raise right hand and stretch (inhale and exhale)
Raise left hand and stretch
Arms up (inhaling), arms down (exhale)
Shoulders up / down, right shoulder up, left shoulder up
Move your head to the front and back, to one side and to the other. Bend down to your feet, stand up and stretch.

Introduction to Session One: The Basics about Young Children’s Brain. (Figure 1.1. See also Appendix A, Slide #3).

Goswani (2008) stated that “the brain is the main organ of learning, and so a deeper understanding of the brain would appear highly relevant to education” (p. 381). Therefore, my purpose is to begin building EFL early childhood teachers’ knowledge of and understanding about main functions, structures, and terms used to describe the developing brain.



**Session One:
The Basics About Young Children’s Brain**

Learning outcomes

At the end of this session participants will be able to:

- ▢ describe relevant facts about the brain regarding young children’s learning;
- ▢ identify main brain structures and some of their functions;
- ▢ reflect on their main role in shaping the children’s experiences;
- ▢ implement teaching practices that will benefit ELLs.

Figure: 1.1 Session One: Learning Outcomes

Conceptions about the Brain

I will begin this session by inviting teachers to participate in the game “Facts vs Myths”. (Figure 1.2. See also Appendix A, Slide #4).

Objective: Participants will be able to recognize facts about the brain from myths.

Instructions: Form groups of four to six participants. Each participant grabs a card from the mystery bag, reads the information and decides if the information is a fact or a myth. Each group has a chart divided in half, facts on one side, and myths on the other side. Participants share and

discuss what they know about the brain and try to make the best decision of where to place each card.

Time: 15 mins

Materials: Cards with myths or facts about the brain (See Appendix B), plastic chart.

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Time: 15 mins

Materials: Cards with myths or facts about the brain (See Appendix B), plastic chart.



Figure 1.2: Facts vs Myths

After the activity is completed, the whole group comes together and share their findings about the brain. I will show slide Figure 1.3 (See also Appendix A, Slide #5) and I will explain what current neuroscience research has revealed about the brain.

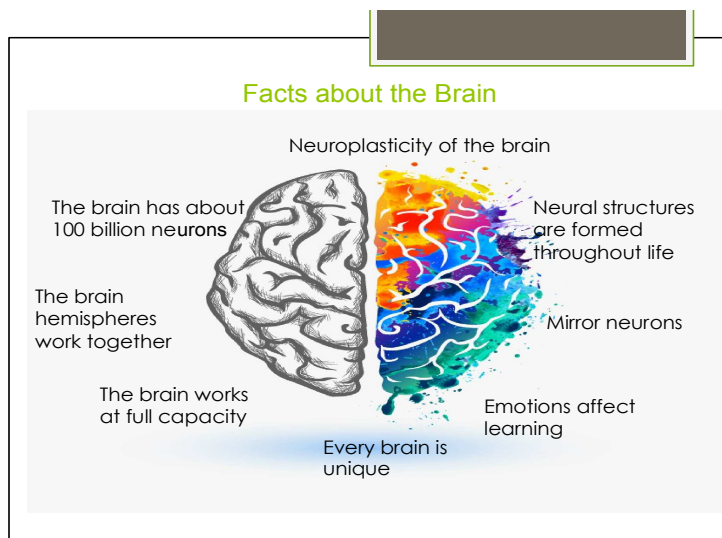


Figure 1.3: Facts about the Brain

At this stage, in order to achieve a better understanding of the brain it is necessary to introduce some main terms related to the brain's characteristics. EFL teachers will be invited to complete Activity 1.2. Brain Terminology Jumble (See Appendix C).

Activity 1.2. Brain Terminology Jumble (See Appendix C).

Objective: Teachers will be able to connect specific brain terms to their correct definition.

Instructions: 1. Unscramble the letters to form the correct word. The first letter of the word has been underlined.

2. Match by color the word and its definition.

After completing this activity, teachers will have the opportunity to discuss their ideas and conceptions about these brain terms (See Appendix A, Slides # 6 and #7) can be used as support to clarify meanings.

Materials: Brain Jumble handout (See Appendix C).

Time: 15 minutes

Activity 1.3- Brain Break.

Participants are encouraged to stand up, stretch and participate singing and dancing: “The Body Bop” by The Learning Station ([Body Bop](#)) (Figure 1.4. See also Appendix A, Slide #8).



Figure 1.4: The Body Bop

Introduction to the Structures in the Brain and their Functions

In order to better understand how learning happens in our complex brain, it is necessary to begin by examining some of the basic elements and functions of the brain's structure (Zadina, 2014).

Activity 1.4 Labelling the Structures in the Brain and their Functions (Figure 1.5. See also Appendix A, Slide #9).

Objective: Teachers will be able to recognize the main structures in the brain and their functions.

Materials: Handout 2 (See Appendix D, Activity 1.4), Video: The Human Brain [The Human brain](#)

Instructions: Before presenting the slide and video: The Human Brain, give out Handout 2 (See Appendix D) and provide about three minutes for teachers to label the different areas. Then they will watch the video (Figure 1.5. See also Appendix A, Slide #9) about the Human brain and will have the opportunity to finish labelling the brain structures and add simple descriptions of their functions.

Time: 15 minutes

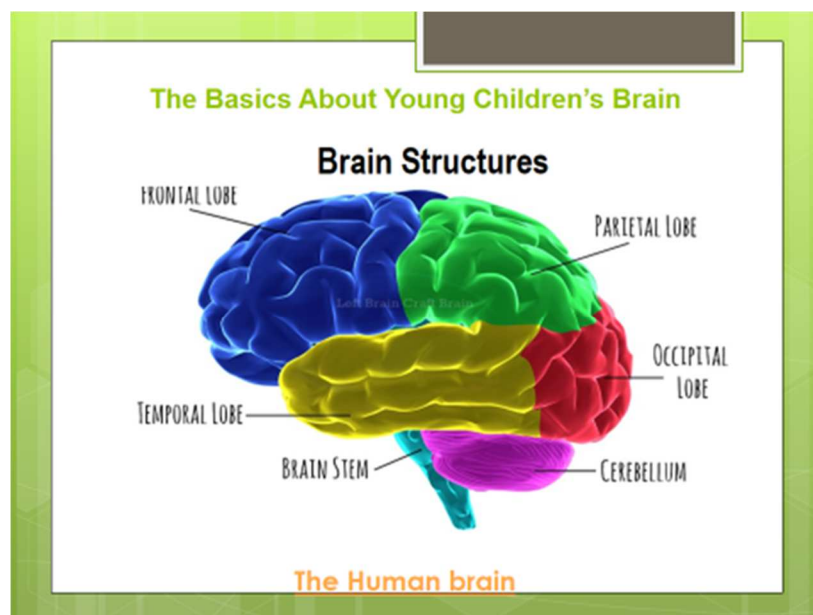


Figure 1.5: The Human Brain

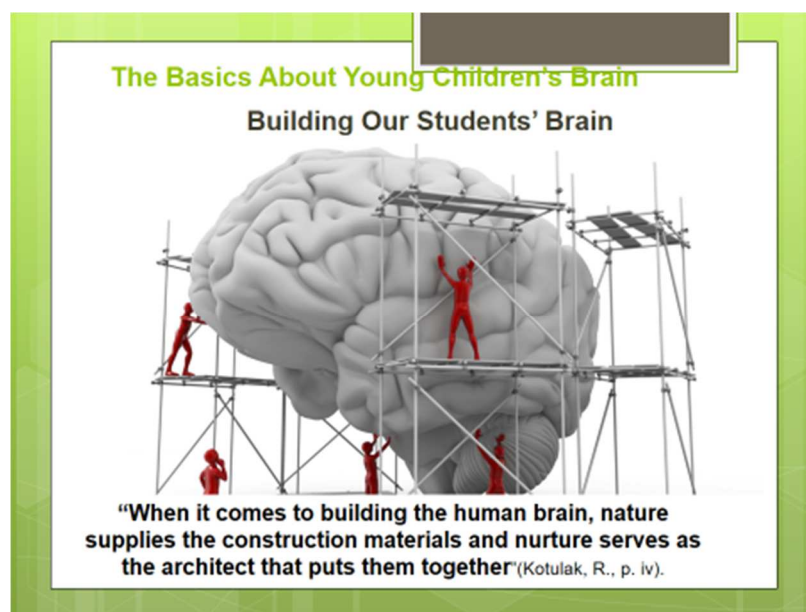


Figure 1.6: Building our Students' Brain

Activity 1.5 Building our Students' Brain (Figure 1.6. See also Appendix A, Slide #10).

Objective: Teachers will be able to explore the main structures and functions of the brain and based on their knowledge and understanding, they will design a 3D-model of a brain.

Instructions: Using the information they have learned about the brain, teachers work in small groups and use different resources to create a 3D model of a human brain. They will decide which resources they will use for their design and how they will present it. At the end, they will record a two minutes short video presenting their brain model and explaining the brain's structures and functions.

Materials: Handout 2 “Brain Structures and Functions” (See also Appendix D) and a mobile phone to record presentation. Have available large plastic boxes with different resources sorted. For example: Box 1: clay, different colored playdough, plastic tools for molding, different shape of uncooked pasta, grains and seeds.

Box 2: white glue, silicone glue, scissors, paper, cardboards, tape, color pencils, elastic bands, colored chalk, markers, paints, brushes.

Box 3: Recycled materials such as: egg cartons, different plastic containers, small juice boxes, packages.

Time: 45 minutes

Building the Foundations for Learning

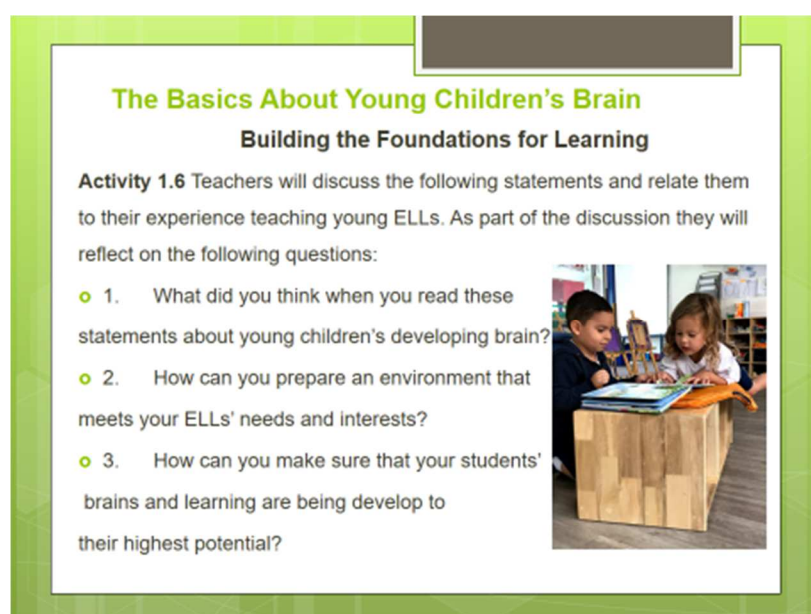
Studies about child development acknowledged that children's learning happens very early in infancy involving complex processes in the brain (Kuhl, 2011). Neural connections in the infant's brain develop at an accelerated rate, consequently a two year old may have 40 percent more neurons and synapses than an adult. These synapses develop in response to the infants' experiences in their environment (Robson, 2012). Children's brains are always processing the information from their environment and from those around them. According to Wilson and Conyers, “learning is a joyful experience that immerses the child in a challenging learning process involving intellect, creativity, emotions, and physiology” (p.11). Therefore, as

EFL teachers it is our responsibility to provide our students with careful planned, multisensory learning environments and experiences that will develop our students' knowledge and abilities.

Activity 1.6 Building the Foundations for Learning (Figure 1.7. See also Appendix A, Slides #13, #14 and #15).

Objective: Teachers will discuss and reflect on the statements about brain development and learning in young children.

Time: 15 minutes



The Basics About Young Children's Brain
Building the Foundations for Learning

Activity 1.6 Teachers will discuss the following statements and relate them to their experience teaching young ELLs. As part of the discussion they will reflect on the following questions:

- 1. What did you think when you read these statements about young children's developing brain?
- 2. How can you prepare an environment that meets your ELLs' needs and interests?
- 3. How can you make sure that your students' brains and learning are being develop to their highest potential?

Figure 1.7: Statements about the Developing Brain

Activity 1.7 How we learn? 3-2-1 (Figure 1.8. See also Appendix A, Slide #16 and #17).

Objective: Teachers will be able to analyze how our brain learns.

Instructions: Teachers will watch the video “How we learn?” and they will complete handout 4: How we learn? 3-2-1- (See Appendix D).

Materials: Video <https://www.youtube.com/watch?v=wlaG99awCD8>

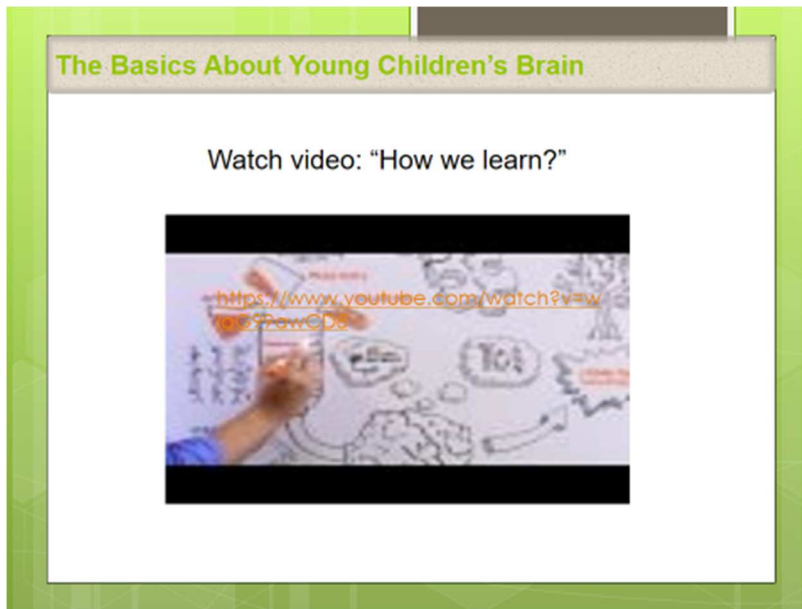


Figure 1.8: Video “How we learn?”

Reflective Practice

Activity 1.8- Reflective Practice (Figure 1.9. See also Appendix A, Slide #18).

Objective: Teachers will be able to reflect on their teaching practices in the EFL classroom.

Instructions: Discuss within your group the following question:

Based on the information that you have learned about young children’s developing brain and process of learning, in the EFL classroom how can you ensure that ELLs’ skills, knowledge and understanding of the language are being nurtured? As a group write down your ideas.

Individually write down three ideas that you will incorporate in your teaching practice.

Time: 20 minutes

The Basics About Young Children's Brain

Activity 1.8 – Reflective Practice

Discuss within your group the following questions:

- Based on the information that you have learned about young children's developing brain and process of learning, in the EFL classroom how can you ensure that ELLs' skills, knowledge and understanding of the language are being nurtured? As a group write down five main ideas for sharing.
- How will you incorporate these ideas into your daily teaching to support the language development of all learners?

Figure 1.9: Reflective Practice Introduction to Session Two: Metacognition in the Early Years (Figure 2.1. See also Appendix A, Slide #19).

**Session Two:
Metacognition in the Early Years**

Learning outcomes

At the end of this session participants will be able to:

- recognize the importance of metacognition for learning;
- implement some strategies to support metacognition in young ELLs;
- join others to become a "Professional Learning Community".

Figure 2.1 Session 2: Learning Outcomes

More educators are instructing their students about metacognition and the strategies they can use to develop their thinking and become more effective learners. According to Flavell and Hartman (2004) children with metacognitive skills benefit greatly from identifying their own methods for

thinking, understanding how to arrive at solutions, and evaluating decisions. Therefore, knowing about metacognition influences children's selection of strategies for learning and for finding solutions (Flavell & Hartman 2004).

Activity 2.1 What is Metacognition? (See Appendix A, Slide # 20).

Objective: Teachers will share their knowledge about metacognition and will build on their understanding of this term.

Instructions: 1. Teachers share with their group what they think metacognition is and why they think is important for learning? They write down their responses on the handout: What we know about Metacognition (See Appendix F)).

2. Teachers analyze quotes that are explanations about metacognition (See Appendix A, Slide #21).

3. Watch the short video "What is Metacognition? (See Appendix A, Slide #22).

<https://www.youtube.com/watch?v=QJWsIJQHUXM>

Time: 20 minutes

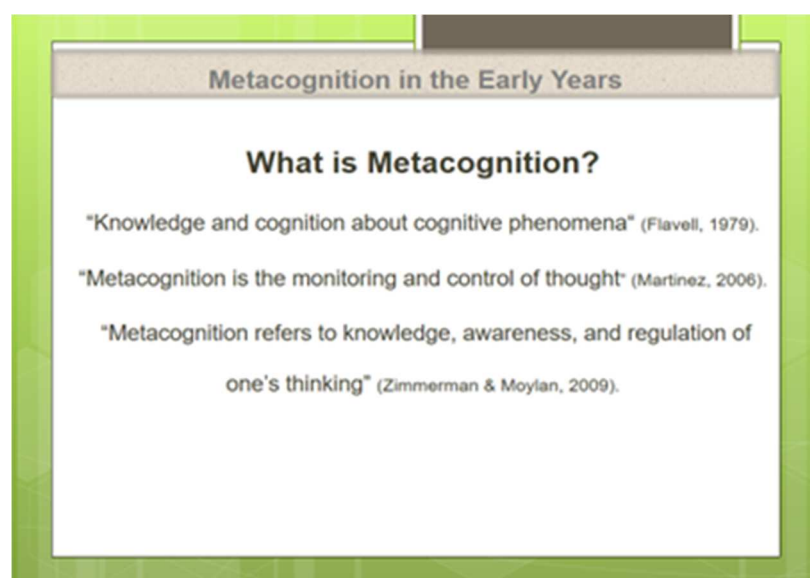


Figure 2.2: What is Metacognition?

Flavell (1979) considered metacognition to be the ability to recognize and monitor our own thinking processes for understanding and learning. Likewise, Wilson and Conyers, (2016) described metacognition as the capacity of being aware and in control of our own thoughts and mental functions.

Metacognitive strategies for young ELLs

Practicing metacognition strategies enables learners to gain control over their brains' abilities as well as to distinguish which cognitive strategies should be used and when (Wilson & Myers 2016). When young ELLs are instructed on using metacognitive strategies, they gain a better understanding of how language is learned (Chatzipanteli, Grammatikopoulos & Gregoriadis, 2013).

Very often young children are not seen as agents of metacognitive abilities, however there are more studies now that recognize the flourishing of metacognitive skills in very young children. Metacognitive abilities are evident when children begin to control their behavior and manage their attention, choose their tasks according to their abilities, as well as monitor their progress (Dorr & Perels, 2019).

Activity 2.2 Developing metacognitive skills in young ELLs (Figure 2.3. See also Appendix A, Slide #23).

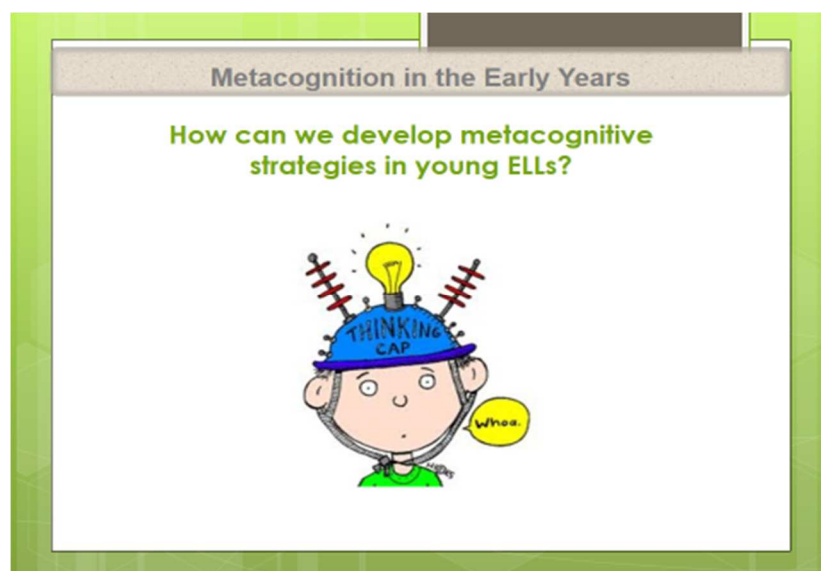


Figure 2.3 Metacognitive strategies

Objective: Teachers will be able to analyze metacognitive strategies that they can develop and implement with their ELLs to improve their English learning.

Instructions: Participants will work in their small groups. They will:

1. Look at slides about metacognitive strategies (Figure 2.4. See also Appendix A, Slides # 24, #25 and #26).
2. Read the quotes and discuss the main points. Also observe the photos in each slide and analyze what is happening? Which metacognitive abilities are the children displaying?
3. How is English learning developed through these activities?

Materials: Slides (Figure 2.4. See also Appendix A, Slides # 24, #25 and #26).

Time: 30 minutes



Figure 2.4: Metacognitive Strategies

Activity 2.3 Biddy Bum Hand Clapping Game (Figure 2.5. See also Appendix A, Slide # 27).



Figure 2.5: Hand Clapping Game

Activity 2.4 Exploring Metacognitive Strategies to Enhance English Language Learning

Objective: Teachers will be able to plan activities using metacognitive strategies to develop skills in young students.

Instructions: Provide teachers with the handout of “Metacognitive Strategies” (See Appendix G).

1. Work with a partner and analyze the different metacognitive strategies that are in the chart.
2. Select three strategies and plan activities according to those strategies that you will use when working with your ELLs.
3. Share one of the activities with your group.

Materials: Printed chart (Appendix F), paper.

Time: 30 minutes

Final Activity

Activity 2.5: Be A Mr. Jensen (Figure 2.6 See also Appendix A, Slide # 29).

Instructions: Teachers watched the video and reflect on the message.

Materials: Video https://www.youtube.com/watch?v=4p5286T_kn0

Time: 10 minutes



Figure 2.6: The End

To finalize the workshop, teachers are invited to attend a follow-up meeting in order to establish a community of practice group. The focus will be to continue learning about neuroscience research on the developing brain of young children, and the implications for effective teaching practices in EFL settings.

Chapter Five: Conclusion

Every day, having the opportunity to be part of the lives of children in their first years of life is a blessing that I greatly enjoy. After having this experience of learning about neuroscience discoveries on brain development and on children's processes of learning, as an early childhood educator, I feel more obliged to continue learning and to encourage other teachers to learn too. Then we will be able to support and provide children who are under our care and guidance with the best resources, environments, and experiences that we can give them in order for them to flourish and achieve their potential in every area.

On many occasions, EFL teachers measure children's success in learning English by assessing the number of words and phrases that children have memorized, and that many times, make no sense to them. We want children to learn, but sometimes we fail to understand how they learn. Consequently, we continue to use obsolete teaching approaches and practices that do not have a positive impact on our children's learning.

EFL teachers of young children play a main role in supporting children's overall learning and development. Therefore, I look forward to using my thesis project as a resource for EFL teachers to explore some of the research on what neuroscientists have learned about the developing brain of young children, and at the same time, provide EFL teachers with professional development opportunities to examine and reflect on their teaching practices, so they will be able to support better children's acquisition of English language skills as well as their development of social and emotional areas.

Additionally, throughout the workshop, my objective is that teachers work together in finding and implementing new and creative strategies according to their students' characteristics

and needs. Also, I am hoping that by introducing EFL teachers into the basics of brain research and metacognition, they will understand that one of their responsibilities with young children is to guide them and provide them with opportunities in the learning environment for them to take control of their learning. It will be too difficult for children to reach their fullest potential if they are always performing a passive role in their learning.

Finally, investigating about recent research in neuroscience education on the brain and on metacognition has been highly interesting. I became very interested in these topics after taking the course on “Metacognition for Language Learning.” The course on metacognition was important for me as an educator, and at the same time, it was an inspiration for learning.

While doing the literature review for my thesis, I found that there is information on educational neuroscience which is very accessible. Research findings are available for teachers and for anyone interested in the topic, written in a way that people who are not scientists can understand. There is so much information to read and learn, and new discoveries that we still do not know about, so I am committed to continue my own learning journey on young children’s learning.

However, as we know we learn better through social interactions and through the sharing and discussion of ideas. Therefore, I am hoping to be able to form a community of practice with other early childhood EFL teachers. This is one of the learning outcomes of my thesis project that teachers, after participating in the workshop, will be captivated with the idea of wanting to inquire more about brain development and about metacognition. Then they will want to come together and form a community of practice, which will help us all learn and build connections with other colleagues and will also benefit our emotional being.

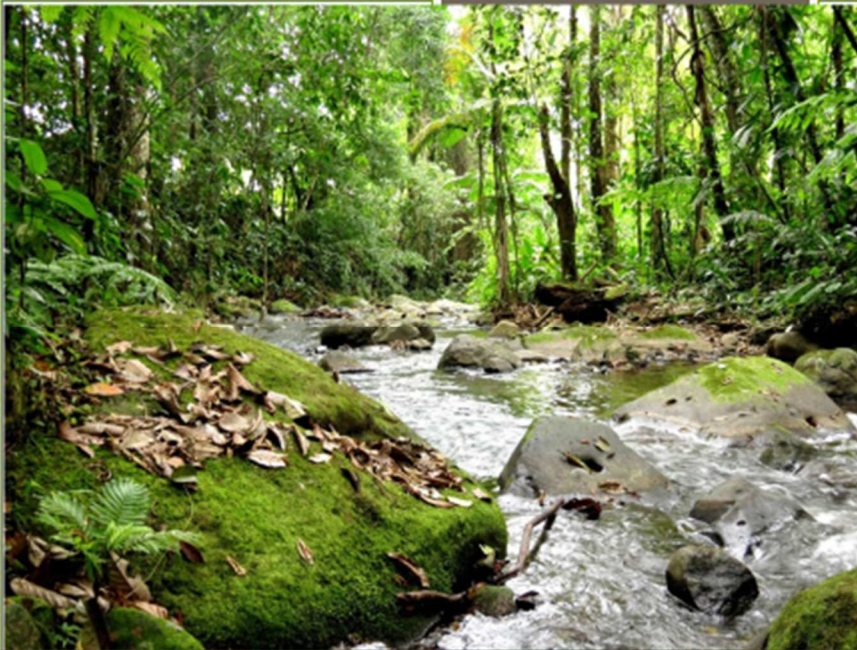
Appendices

Appendix A: Slides

Connecting Brain Research and Metacognition to Young Children's English Language Learning



1



2

Session One: The Basics About Young Children's Brain

Learning outcomes

At the end of this session participants will be able to:

- describe relevant facts about the brain regarding young children's learning;
- identify main brain structures and some of their functions;
- reflect on their main role in shaping the children's experiences;
- implement teaching practices that will benefit ELLs.

3

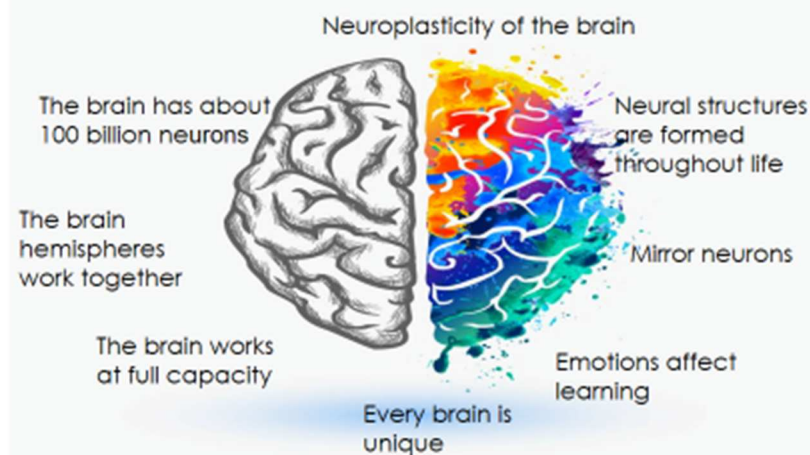
The Basics About Young Children's Brain

What do you know about
the brain?

MYTHS
FACTS

4

Facts about the Brain



5

The Basics About Young Children's Brain

What is..?

- **Neuron:** Cell of the nervous system consisting of a long fiber called an axon, which sends impulses and shorter fibers called dendrites, which receive them. They are found in the brain and spinal cord.
- **Neurotransmitters:** neurons received this name based on their function of transmitting information.
- **Synaptogenesis:** is a process through which neurons send electrochemical impulses to other neurons and create neural networks.
- **Uniqueness brain:** neural structures are the results of each person genetic structure, own biological processes and experiences.

6

The Basics About Young Children's Brain

What is..?

- **Brain plasticity:** the brain changes in response to social interactions and experiences in the environment (Wilson & Conyers, 2013). New learning produces changes to the structure of the brain (Wolfe, 2010). There is **experience-expectant plasticity and experience-dependent plasticity**
- **Mirror neurons:** cells in the brain that activate when seeing someone doing an action and causes the other person's brain to respond as if his own body was doing the same action.
- **Sensitive period:** a time when the brain and body are suited for change and most vulnerable to environmental stimulation.

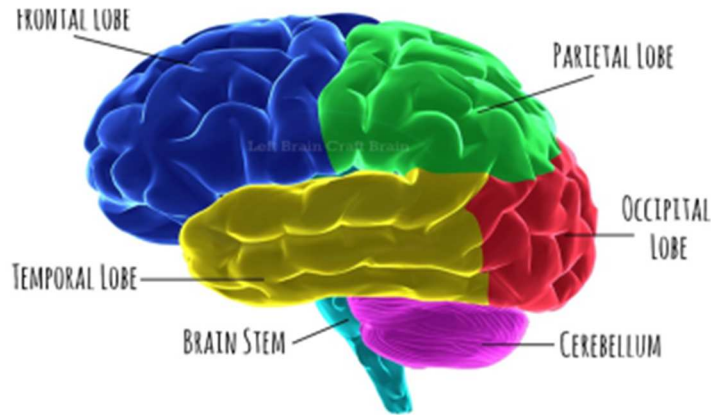
7



8

The Basics About Young Children's Brain

Brain Structures



The Human brain

9

The Basics About Young Children's Brain

- o **Cortex:** is the surface of the cerebrum
- o **Cerebrum:** largest part of the brain, composed of the right and left hemispheres and divided into four lobes.
- o **Frontal lobe:** is at the front of the cortex, is where the regulation of emotions, speech, planning, and reasoning happens.
- o **Parietal lobe:** it processes the sensory input (touch, smell and taste) as well as language and mathematics.
- o **Occipital lobe:** is the visual processing center of the brain.
- o **Temporal lobe:** involved in the organization of auditory perception, speech, language production and memory.

10

The Basics About Young Children's Brain

- o **Limbic system:** structures that control emotions and memory. The five major structures are the thalamus, hypothalamus, amygdala and hippocampus.
- o **Broca's area:** is located at the left frontal lobe, is associated with the expressive aspects and production of speech.
- o **Wernicke's area:** is located at the left temporal lobe, neural structures in this area are in charge of the reception, comprehension and formulation of language.
- o **Cerebellum:** receives information from sensory systems and coordinates and regulates muscle movement, balance and coordination.
- o **Brain stem:** controls the communication between the brain and the body, the breathing and heart rate.

11

The Basics About Young Children's Brain

Building Our Students' Brain



"When it comes to building the human brain, nature supplies the construction materials and nurture serves as the architect that puts them together"(Kotulak, R., p. iv).

12

The Basics About Young Children's Brain

Building the Foundations for Learning

Activity 1.6 Teachers will discuss the following statements and relate them to their experience teaching young ELLs. As part of the discussion they will the following questions:

- o 1. What did you think when you read these statements about young children's developing brain?
- o 2. How can you prepare an environment that meets your ELLs' needs and interests?
- o 3. How can you make sure that your students' brains and learning are being develop to their highest potential?



13

The Basics About Young Children's Brain

Building the Foundations for Learning

Activity 1.6 Ask teachers to discuss the following statements in their groups:

- o Studies about child development acknowledged that children's learning happens very early in infancy involving complex processes in the brain (Kuhl, 2011).
- o Neural connections in the infant's brain develop at an accelerated rate, consequently a two year old may have 40 percent more neurons and synapses than an adult. These synapses develop in response to the infants' experiences in their environment (Robson, 2012).
- o Children's brains are always processing the information from their environment and from those around them. According to Wilson and Conyers, "learning is a joyful experience that immerses the child in a challenging learning process involving intellect, creativity, emotions, and physiology" (p.11).

14

The Basics About Young Children's Brain

Building the Foundations for Learning

Activity 1.6- Ask teachers to discuss the following statements in their groups:

- o Ostroff (2012) affirmed that "even though all of our brains contain the same basic structures, our neural networks are as unique as our fingertips" (p.5).
- o The neural structures for learning are determined by "the number of relevant neurons firing, their firing rates, the coherence of the firing patterns, and how 'clean' they are for signaling the appropriate information will all vary depending on how the current environmental input activates the existing network" (Munakata, 2001 as cited by Goswami, 2008, p. 388).
- o EFL teachers have the responsibility to provide students with careful planned, multisensory learning environments and experiences that will develop the students' knowledge and abilities.

15

The Basics About Young Children's Brain

Watch video: "How we learn?"



16

The Basics About Young Children's Brain

Rushton (2011) argued that ESL/EFL teachers working with young students need to employ leveled resources and plan language activities for different abilities and interests; so all learners can experience success in learning. Correspondingly, instruction should be focused on the process of developing each learner's skills and knowledge, as well as celebrating progress, rather than valuing only performance (Hinton, Miyamoto & Della-Chiesa, 2008).



17

The Basics About Young Children's Brain

Activity 1.8 – Reflective Practice

Discuss within your group the following questions:

- Based on the information that you have learned about young children's developing brain and process of learning, in the EFL classroom how can you ensure that ELLs' skills, knowledge and understanding of the language are being nurtured? As a group write down five main ideas for sharing.
- How will you incorporate these ideas into your daily teaching to support the language development of all learners?

18

Session Two: Metacognition in the Early Years

Learning outcomes

At the end of this session participants will be able to:

- recognize the importance of metacognition for learning;
- implement some strategies to support metacognition in young ELLs;
- join others to become a “Professional Learning Community”.

19

Metacognition in the Early Years



20

Metacognition in the Early Years

What is Metacognition?

"Knowledge and cognition about cognitive phenomena" (Flavell, 1979).

"Metacognition is the monitoring and control of thought" (Martinez, 2006).

"Metacognition refers to knowledge, awareness, and regulation of
one's thinking" (Zimmerman & Moylan, 2009).

21

Metacognition in the Early Years

What is Metacognition?

What is Metacognition?



22

Metacognition in the Early Years

How can we develop metacognitive skills in young ELLs?



23

Metacognition in the Early Years

During children's first interactions with their learning environments, is that children begin to use basic metacognitive strategies, such as planning, monitoring, and being persistent to resolve tasks (Chatzipanteli, Grammatikopoulos & Gregoriadis, 2013).



24

Metacognition in the Early Years

“Children’s brains need to be immersed in real life, hands on, and meaningful learning experiences that are intertwined with a commonality and require some form of problem-solving” (Rushton, 2011).



25

Metacognition in the Early Years

“Through play and social interactions is that children actively explore their natural environment, try to make sense of the world around them by observing others, exploring objects, take risks, and become active inquirers (Wilson & Conyers, 2013).



26

Metacognition in the Early Years

Biddy Bum Clapping Game




Download from
OraiShare.com <https://www.youtube.com/watch?v=aXZWqOf2ISA>

27

Metacognition in the Early Years

Exploring metacognitive strategies to enhance English learning.



28

Metacognition in the Early Years



https://www.youtube.com/watch?v=4p5286T_kn0

THE END

Appendix B: Myth or Fact Cards

Activity 1.1 Myth or Fact cards.

Myth or Fact? Some people are right brained and some are left brained. This is the reason why we learn differently.	Myth or Fact? We only use 10% of our brains.	Myth or Fact? Genes and experiences shape the quality of the brain structure and the foundation for all learning.
Myth or Fact? Every brain is unique.	Myth or Fact? Emotions affect the children's ability to learn.	Myth or Fact? Plasticity of the brain occurs only during the first years of life.
Myth or Fact? At any age, learning provokes structural changes in the brain.	Myth or Fact? During the first year of life, an infant's brain is capable of distinguishing the sounds from all languages.	Myth or Fact? Effective learning of a second language is possible only when you are young.
Myth or Fact? In our brain we have about 100 billion nerve cells.	Myth or Fact? Intelligence is a fixed trait that cannot be changed.	Myth or Fact? Mirror neurons become active in the child and develop in response to observation, imitation and learning.

Myth or Fact? The brain uses only visual and auditory systems to learn.	Myth or Fact? Learning is best attained when children have the opportunity to move, stretch, run, and play.	Myth or Fact? The brain requires a lot of energy to operate.
Myth or Fact? The brain's capacity to hold new information is very limited and it gets easily overloaded.	Myth or Fact? Our brain is social, we can impact others' brains.	Myth or Fact? After the first year of life, the brain is not able to generate new neurons.

Appendix C: Brain Terminology Jumble

Handout 1: Activity 1.2 Brain Jumble



Brain Jumble

The following jumbled words will help you to keep a sharp brain. Form the word and match it to the right meaning. At the end you will have gained more knowledge about the brain!

ENRNOU

____-____-____-____-____-____

YSATGNSIEPOSE

____-____-____-____-____-____-____-____-____-____-____-____-____

STAPILCTYI

____-____-____-____-____-____-____-____-____-____-

ESINTVIES RPIDOE

____-____-____-____-____-____-____-

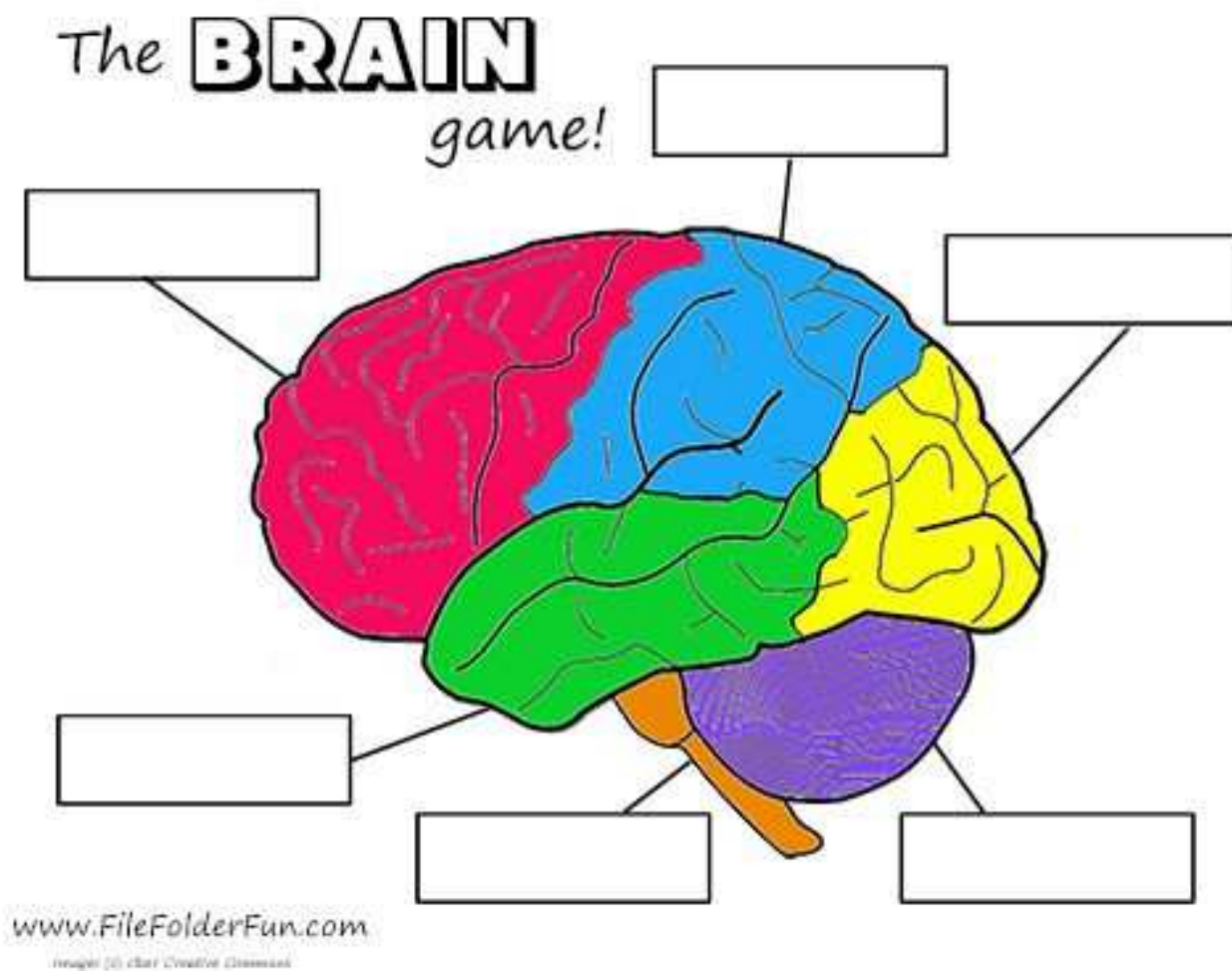
____-____-____-____-____-____

Use color to match the word to its meaning

1. Mirror neurons	Cell of the nervous system consisting of a long fiber called an axon, which sends impulses, and shorter fibers called dendrites, which receive them.
2. Sensitive period	The brain changes in response to social interactions and experiences in the environment. New learning produces changes to the structure of the brain.
3. Brain Plasticity	Cells in the brain that activate when seeing someone doing an action and causes the other person's brain to respond as if his own body was doing the same action.
4. Neuron	Is a process through which neurons send electrochemical impulses to other neurons and create neural networks.
5. Synaptogenesis	A time when the brain and body are suited for change and most vulnerable to environmental stimulation.

Appendix D: Structures in the Brain

Handout 2: Activity 1.4 Label the Structures in the Brain



Appendix E: How We Learn?

Handout 3: Activity 1.7 How we Learn? 3-2-1

After watching the video complete the following form and share your ideas with your group.

Describe 3 things that you learned.

Explain 2 ideas that you will implement with your ELLs.

Name 1 idea that you will like to investigate more and explain why?

Appendix F: What We Know About Metacognition

Handout 4: Activity 2.1 What We Know About Metacognition

Metacognition is...



New ideas that I learned about metacognition...

Appendix G: Developing Metacognitive Skills

Handout 5: Activity 2.2 Developing Metacognitive Skills in Young Children

Metacognitive Strategies	
Name of Strategy	Description
<ul style="list-style-type: none"> Drawing-telling 	<p>Children are encouraged to reflect on their ideas and thoughts. Then they draw a picture that represents their thinking (Kendrick & McKay, 2002; Salmon, 2008a as cited by Chatzipanteli et al., 2013).</p> <p>.</p>
<ul style="list-style-type: none"> Self-questioning and think-aloud techniques 	<p>Teacher models to students by thinking aloud. For example thinking aloud about the meaning of a word, an answer to a math problem or their own ideas about a topic. Also, self-questioning how they learned something, what they are wondering, how they can improve in something?</p> <p>(Wilson & Conyers, 2016; Fisher, 1998 as cited by Chatzipanteli et al., 2013).</p>
<ul style="list-style-type: none"> Selective attention 	<p>Teacher models and practices activities that show students how to become better listeners, and how they can direct their attention to what is more relevant. What do I need to do in order to listen better? Look at the person, have my hands in front of me, and think about what the person is saying (Wilson & Conyers, 2016).</p>
<ul style="list-style-type: none"> Self-regulation 	<p>Teacher models and role-plays with children appropriate behaviors and social skills, such as sharing, waiting for their turn, inviting others to play and disagreeing about something (Wilson & Conyers, 2013)</p>
<ul style="list-style-type: none"> Self-monitoring 	<p>Teacher encourages children to think and reflect on their own progress and learning, where they are and what they need to improve (improve (Wilson & Conyers, 2016; Chatzipanteli et al., 2013)</p>

<ul style="list-style-type: none">• Self-check	Teacher encourages children to evaluate themselves to continue working towards the achievement of their goal (Chatzipanteli et al., 2013).
<ul style="list-style-type: none">• Reciprocal teaching	Children work in pairs and provide feedback to each other based on established criteria (Mosston & Ashworth, 2002 as cited by Chatzipanteli et al., 2013)

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